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A Third Catalogue of 76 New Double Stars, discovered with a 6-inch Alvan Clark Refractor. By S. W. Burnham, Esq.

(*Communicated by Mr. Dunkin.*)

The accompanying list is the result of a search for new double stars since the preparation of the Catalogue in the *Monthly Notices* for May 1873. The 6-inch Alvan Clark refractor previously described has been used exclusively. In the beginning I limited the distance of doubles to be noted as new to 10″. A few exceptions were made in the case of prominent stars, and where additional companions to well-known doubles were found. In the present observation, I have rarely paid any attention to double stars where the estimated distance exceeded 5″, rejecting also faint pairs of below the 9th magnitude unless connected with a brighter star. With Struve's limit of separation, 32″, a very large number of uncatalogued double stars could be easily found; and if, in addition, faint pairs were noted like those comprising the larger portion of the Catalogues of Sir John Herschel, the number which could be added would be still greater, and only limited by the time necessary to observe their places.

Most of the following are sufficiently close and difficult to be interesting. The distances of fifty-five are within 2″, and of that number about one-fourth will not exceed 1″. The power used almost constantly has been 212; and I believe every double has been discovered, or suspected with that eye-piece, a higher power being used only on very close objects. My next lower power is 125; but it is of no use on really difficult double stars of the class sought for; and my experience has been that when the higher powers cannot be used to advantage, it is in vain to look for anything new.

During the period covered by these observations I noted, altogether, as being possibly not already known, 199 double stars, with an approximate determination of the places. Of this number, 76, forming the present Catalogue, were ascertained to be new. The remaining 123 are distributed among discoverers as follows:—

Struve . . .	75
Otto Struve . .	35
Herschel I. . .	5
Herschel II. . .	2
Alvan Clark . .	3
Dawes . . .	1
Burnham. . . .	2
	123

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From this it will be seen that rather more than one-third of the stars entered really proved to be new. Of course, it will be understood that this is only a small portion of the number picked up; but my practice has been to give no attention to stars unless at least moderately difficult under average atmospheric conditions. Occasionally, perhaps, if the place had been determined the double might have been found to be new, but the time saved more than compensates for the probable omissions. In my earlier observations, the proportion of new objects was very much less; but practice has enabled me to know better what to look for, and to decide with some certainty whether or not the star observed is likely to be new; and I think this ratio would now hold substantially good. The value of the various double star catalogues will be seen from a comparison of the number of double stars found and identified in them. *Mensuræ Micrometricæ*, which contains six times as many stars as Otto Struve's Catalogue, furnishes but twice as many, while in all the rest of the works on this subject, embracing between 4,000 and 5,000 stars, there are but eleven identified.

My observations have been largely south of the zenith, and particularly in the vicinity and south of the equator, and this will account for the undue proportion of southern stars. More attention recently, however, has been given to regions further north, with the result of discovering some very interesting pairs. A more careful examination has also been given to previously known doubles encountered from time to time, and in several instances the principal star has been found to be again closely double. Perhaps the most prominent of these, although not the most difficult, is β *Delphini*. As this star has been observed by Struve, both Herschels, Smyth, Dembowski, and others, without the duplicity of the bright star being detected, there is a possibility of its having opened within a few years. Although by no means a severe test for a 6-inch aperture, it is still difficult enough to have been missed, unless very carefully examined. This is not the case with Σ 2793; and it seems impossible for Struve to have overlooked it, unless much closer then than now. 51 *Aquarii* is closer and much more difficult than either. In this part of the heavens generally, there is a great scarcity of close doubles in *Mensuræ Micrometricæ*. Several have been found, given in this and the preceding lists. The close pair of H. 2867 is an exceedingly difficult object, and has no counterpart among Sir John Herschel's double stars. It is a remarkable fact, and hardly accounted for by the sweeping power employed, that the seven catalogues of Sir John Herschel, which, with *Cape Observations*, comprise more than 3,800 double stars visible in this latitude, do not contain a single very close double star, and but six where the estimated distance is down to 1″. How comparatively little there is in them likely to receive any attention in searching for new objects with the limit I have adopted as to distance and magnitudes, will be apparent from an inspection of

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the statement above, giving the original observers of the double stars noted from time to time, and found to be already known.

I would call particular attention to *ν Scorpii* (No. 120), which I have very little doubt is an exceedingly close and difficult double star. I examined it several times under the most favourable circumstances, but could not get rid of an apparent elongation of the principal star in a direction nearly north and south. A power of 410 was used, and the utmost care taken in focussing. *β Scorpii* is an admirable object for this purpose, having about the same declination, and also a companion in the same general direction as the more distant companion to *ν Scorpii*. *β* was always seen with a perfectly round and sharply defined disk, and turning the instrument at once on *ν*, it did not seem possible that the slightly wedge-shaped elongation could be an illusion. Not being able to settle the question positively with my aperture, I requested Professor C. A. Young to examine it with the splendid 9·4-inch Clark refractor of the Dartmouth College Observatory, and he kindly did so. He informs me that he observed it on several occasions, generally under unfavourable conditions; but the last time the air was pretty steady, and while the elongation might be due to atmospheric dispersion, he was rather inclined to think it was double, although he could not even notch it. In the mean time I had tried it again on a number of superb nights, but with no further result than tending to confirm the previous suspicion. From its great southern declination it would necessarily be a very difficult object in this latitude; and it is only when the air is unusually steady that a sufficiently high power can be used to show it. I trust that some observer in the Southern Hemisphere will give this star a careful examination. I shall certainly be much disappointed if it prove to be single. As a wide pair this star is HV. 106 (= Sh. 220 = Σ C.P. 509). Jacob at Madras in 1847 found that the companion was also double, and that is now a very easy object. Should the principal star also prove to be double, it will make by far the most interesting known quadruple in the heavens.

The Nebula given at the end of this Catalogue may possibly not be new, but I have not been able to find it in any of the works I have access to. At the first glance it was taken for a close double companion to Argelander's star. With a large aperture, it will doubtless be found to be a very interesting and curious object.

The distances and angles are in all cases estimated. The numbers are continued from the last Catalogue.

Chicago, U.S., 1873, *November* 12.

No.	Designation.	R.A. 1880.	Decl. 1880.	Position est.	Distance est.	Magnitudes.	Discovered 1873.	Notes.
		h m s	° ′	°	″			
107	Arg. (+62°) 93	0 24 28	+62 41	360	2	9, 10	Sept. 8	A faint and not very interesting pair. About 25′ *n* of *κ Cassiopeiæ*. One of four stars in the same field, forming an irregular line.
108	Arg. (+62°) 107	0 27 43	+62 15	10	5	7½, 10	Sept. 8	A third star at 240° 40″. It is 1ᵐ 22ˢ *f κ Cassiopeiæ*. An 8 m. star in the field *s p*, has a 15″ companion.
109	Ceti 91 A and B C	0 30 26	−17 37	355	100	7,	Oct. 23	A distant double companion.
	B and C	...	...	340	5	10, 10		
110	Ceti 187	1 14 4	−16 32	25	1·8	7, 8	Oct. 28	An elegant but easy pair.
111	Anonyma	10 45 10	− 8 28	360	1·8	9½, 9½	April 25	Small and rather difficult pair, some distance *s f* 41 *Sextantis*. It is 13ˢ *f* Weisse x. 791, from which its place is determined.
112	P. xii. 243 A and B	12 54 46	+19 1	345	155	6½,	June 3	A pretty double companion to a bright star in *Coma Berenices*. Erroneously called Weisse xii, in Heis' Catalogue.
	B and C	...	...	290	2	8, 9		
113	Arg. (+12°) 2597	13 23 9	+12 6	210	1·6	8½, 12	June 3	I have very little doubt of the duplicity of this star, although it was never well seen, and if double is one of great difficulty. It is 39′ exactly *n* of 71 *Virginis*.
114	Weisse xiii. 438	13 28 0	− 8 0	130	1·8	8, 8	May 30	A fine and not difficult pair, about 1° *s p* 81 *Virginis* (Σ 1763). The *s f* star of a pair in the finder.
115	L. 25365	13 39 24	+10 29	220	1·3	8, 12	June 1	An excessively difficult and unequal pair in *Virgo*; seen well only by the most careful preparation and attention.

No.	Designation.	R.A. 1880. h m s	Decl. 1880. ° ′	Position est. °	Distance est. ″	Magnitudes.	Discovered 1873.	Notes.
116	L. 26177	14 13 3	−13 9	280	2·5	8, 9	May 15	A pretty little pair 20′ *n* of λ *Virginis*; very easy.
117	L. 26481	14 24 41	−15 5	90	2	8, 9	May 22	Another pair in *Libra* similar to the last.
118	No. 4, Z. 205	14 47 5	−16 0	300	1·7	9, $10\frac{1}{2}$	June 1	A very difficult object, requiring good weather to be well seen. It is $2\frac{1}{2}^{m}$ *f* and 28′ *s* of α *Libræ*. Place from Argelander's Southern Zones.
119	L. 27454	14 59 11	− 6 33	300	1	8, 9	May 4	A fine pair in *Libra* in the vicinity of δ *n f*. It has a minute companion *s f*.
120	ν Scorpii A and B	15 5 1	−19 9	360?	0·3?	4,	June 14	The principal star of this well-known triple strongly suspected to be a very close double. (See further reference in the introduction to this paper.)
121	B.A.C. 5163	15 32 19	−27 16	270	1·5	7, 7	May 30	An elegant pair 2^{m} 55^{s} *f* and 29′ *n* of 39 *Libræ*, and not difficult under favourable conditions.
122	L. 28495	15 32 58	−19 23	210	2	7, $7\frac{1}{2}$	May 31	This very easy pair precedes κ *Libræ* 2^{m} 3^{s}, and is 5′ *s*.
123	No. 25, Z. 245	16 47 29	−21 51	210	2	8, 9	June 16	In *Ophiuchus*; place from Washington Meridian Zones.
124	L. 31224	17 3 59	− 0 37	250	1	8, 10	May 31	A very difficult pair in *Ophiuchus* *n f* a 6 m. star (B.A.C. 5774), but, finally, perfectly seen.
125	P. xvi. 311	17 4 43	−26 53	90	1·5	7, 11	June 13	An exquisite pair 3^{m} 16^{s} *p* the well-known double, 36 *Ophiuchi*, and 28′ 18″ *s*. The colours of the components are strikingly contrasted when the air is steady enough to give a sharp definition; but it is an object of very great difficulty and requires careful attention. This is B.A.C. 5789. There is an 8 m. star nearly north and almost exactly *p* 36 *Ophiuchi*, which may be a very close equal pair.

No.	Designation.	R.A. 1880. h m s	Decl. 1880. ° ′	Position est. °	Distance est. ′	Magnitudes.	Discovered 1873.	Notes.
126	P. xvii. 43	17 12 53	−17 38	250	1·8	6½, 9	June 15	B.A.C. 5839. Another fine pair in *Ophiuchus*, but comparatively easy. Very nearly visible to the naked eye; rated 6 m. in Lalande, and 5·5 in Washington Catalogue of Stars. A splendid object.
127	L. 31454	17 13 24	−27 13	90	5	8, 10	June 6	The *p* of two small stars 6′ or 7′ apart, and some distance *s f* 36 *Scorpii.*
128	B.A.C. 5879	17 19 33	−26 9	340	4	7½, 10	June 6	This is L. 31668, the declination of which is 4′ 23″ more than that in B.A.C.
129	P. xvii. 100 = B.A.C. 5896	17 21 15	−25 25	100	1·5	7½, 8	June 6	A fine pair *s f* the last; an elegant object.
130	90 Herculis	17 49 22	+40 3	10	1·7	6, 11	June 18	The minuteness of the comparison with its closeness to the principal star makes it tolerably difficult for a 6-in. under ordinary conditions. It is a beautiful pair when well seen.
131	L. 33443	18 3 50	−15 38	270	2	7½, 10	June 16	A pretty pair in *Sagittarius.*
132	B.A.C. 6158	18 4 7	−19 52	60	0·8	7, 7	June 6	An elegant pair about 1° 25′ *n p* μ *Sagittarii*; perfectly seen with disks just in contact.
133	B.A.C. 6261	18 20 15	−26 42	270	1·8	7½, 7½	July 6	The *p* star of a small equilateral triangle of 7 m. stars, about 1° 20′ *s* of λ *Sagittarii.* The other stars of the triangle have distant companions.
134	Arg. (+46°) 2484	18 22 0	+46 50	140	1·3	7½, 10	June 6	A fine and somewhat difficult pair in *Lyra.* The wide pair 1^m 7^s *f* is OΣ 352. The fifth new double star found to-night.

No.	Designation.	R.A. 1880. h m s	Decl. 1880. ° ′	Position est. °	Distance est. ″	Magnitudes.	Discovered 1873.	Notes.
135	Scutum Sob. 45	18 31 16	−14 6	210	2	7, 15	June 14	One of the most difficult double stars of the kind I have ever found or seen, from the excessive inequality of the components. It requires the utmost care in focussing, etc., to be seen, and is far more difficult than the companion to α^2 *Capricorni*. It was only after repeated examination on the finest nights that I could be sure of the existence of the small star.
136	Weisse xviii. 893	18 37 0	+ 5 37	10	4	9, 10	Aug. 20	Of no particular interest, 49^s *p* OΣ 361 and 6′ *s*.
137	Weisse xviii. 1503	18 49 47	+37 14	140	1·5	8, 8	June 8	An easy pair, 17^s *p* and 24′ *n* of δ^1 *Lyræ*.
138	L. 36013	19 6 37	−14 39	270	1	7½, 10	Aug. 16	Splendid but excessively difficult pair in *Sagittarius*. A good example of a close and at the same time unequal pair.
139	Aquilæ 59	19 7 11	+16 39	130	0·5	7, 7	Sept. 7	Very close and remarkably difficult pair. It is the *f* star of a wide pair. OΣ 368; a 0″9 pair in the finder *s f*, is comparatively easy.
140	L. 36185 A and B C	19 10 12	−11 11	330	30	8,	Aug. 22	Star in *Aquila* with a faint double companion.
	B and C	...	...	210	3	14, 15		
141	H. 2867 A and B	19 16 50	+22 17	85	0·4	7½, 8½	Sept. 7	A and C constitute the double star H. 2867, but Sir John Herschel overlooked the duplicity of the principal star. The 15 m. companion is readily seen. The close pair one of the severest tests of the kind in this list. It is L. 36553.
	A and C	...	...	329·5	20 ±	15		
142	Aquilæ 106	19 21 30	−12 23	145	1·4	7, 7+	June 28	Very easy, but still an interesting pair. It is L. 36712.

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No.	Designation.	R.A. 1880. h m s	Decl. 1880. ° ′	Position est. °	Distance est. ″	Magnitudes.	Discovered 1873.	Notes.
143	L. 37049	19 26 39	+49 15	200	2	8½, 10	June 8	In the finder with *θ Cygni s p.*
144	Arg. (+30°) 3664	19 33 3	+30 5	185	4	9, 9	June 29	In *Cygnus, n p φ Cygni.*
145	L. 37464 A and B	19 36 31	+30 26	280	0·9	7, 10	Aug. 26	A most elegant triple, but the close pair extremely difficult from the great difference in brightness of the stars. This star is about 45′ from *φ Cygni n f.*
	A and C	...	...	175	20	11		
146	L. 37544	19 40 5	−20 10	290	1	9, 11	July 21	In a low power field with *f* (56) *Sagittarii* 43ˢ *f* and 7′ 26″ *s.* It is a very difficult object from the smallness of the stars.
147	Arg. (+31°) 3770	19 42 15	+31 48	285	6	9, 11	Oct. 9	An uninteresting double. About 50′ *s* of H.N. 110, the Decl. of which in Sir John Herschel's Catalogue is 11′ too great. It is identical with S. 726.
148	L. 37779	19 45 27	−10 40	310	1	8, 9	July 21	Another close pair some distance *n f* 51 *Aquilæ.*
149	L. 38105 A and B C	19 52 46	+16 10	280	125	7,	Sept. 19	A companion to the companion; 18′ *s* of 11 *Sagittæ.*
	B and C	...	...	200	2·5	11, 15		
150	Σ C.P. 663 = S. 738 A and B	20 5 56	+33 17	112·2	41·86	8, 8·9	Aug. 17	It is singular that Struve and South should have missed the close star, as it is quite plain with 6-in. South's measures of A and B are given. By reason of the distance it is excluded from *Mensuræ Micrometricæ.* The principal star is Weisse **XX.** 176–7.
	B and C	...	...	190	2	11		

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No.	Designation.	R.A. 1880. h m s	Decl. 1880. ° ′	Position est. °	Distance est. ″	Magnitudes.	Discovered 1873.	Notes.
151	β Delphini A and B	20 31 55	+14 11	355	0·7	3½, 5	Aug. 8	It is somewhat remarkable that this splendid pair should have escaped notice. It has been observed by nearly all the well-known double star observers. With an 11 m. companion at 336°·6, distance 34″·64 (Dembowski 1864·9); it constitutes Σ 2704 (= H. iv. 35). Sir William Herschel added a 14 m. companion at 15″, and both were measured by Smyth. Many of the pairs in this list are far more difficult than the close pair.
152	Cephei 55	20 39 18	+56 57	130	0·4	6¾, 8½	Aug. 8	A very close and excessively difficult pair; a short distance *s p* a 5 m. star (P. xx. 322). A pretty severe test. It is Radcliffe 4932.
153	B.A.C. 7187	20 40 10	−26 51	270	1·5	7, 10	Aug. 4	Fine pair in *Capricornus*, and not very difficult. The wide pair 27′ *s* is H. 5220.
154	Taylor 9641	20 46 6	−16 37	55	2·5	8, 10	Aug. 17	L. 40292. In *Capricornus*, 4^m 52^s *p* a 6 m. star (P. xx. 386).
155	Arg. (+50°) 3215	20 48 25	+50 58	40	0·6	7½, 7½	June 13	A splendid double in *Cygnus* 2^m 18^s *f* and 30′ *s* of Σ 2732 (= H. ii. 100 = S. 767). Not very difficult as the stars are very nearly equal. The distance may be underrated.
156	Groombridge 3369	20 57 39	+46 6	260	1·2	8, 11	June 28	This very unequal and difficult pair is 29′ *n* of 60 *Cygni* (OΣ 426). There is a minute distant companion north. Place from Radcliffe Catalogue.
157	Aquarii 43 = Σ 2752 A and C	21 0 29	−14 24	90	20	7, 14	Aug. 18	A minute companion three or four times the distance of Struve's star.

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No.	Designation.	R.A. 1880. h m s	Decl. 1880. ° ′	Position est. °	Distance est. ″	Magnitudes.	Discovered 1873.	Notes.
158	L. 40984	21 1 37	+47 19	320	12	8, 16	July 20	The companion only well seen with high powers. It is 37^s *p* the supposed new Nebula given at the end of this list.
159	L. 41178	21 6 19	+47 2	330	1·2	8, 10	July 6	The north star of a wide pair 3^m 51^s following f^2 (63) *Cygni*. An elegant object.
160	L. 41242 A and B C	21 7 48	+45 13	155	60	8,	July 6	Star with a double companion.
	B and C	...	...	140	2	11, 11		
161	Weisse xxi. 197 A and B	21 10 53	− 5 45	330	90	9,	Aug. 23	Star with double companion; in the finder with 15 *Aquarii*, *n p*.
	B and C	...	...	300	2·5	12, 12		
162	Arg. (+35°) 4461	21 12 14	+35 16	80	1·5	8, 8	June 26	A pretty pair about 50′ *n* of *υ Cygni* (OΣ 433).
163	L. 41386	21 12 47	+11 4	260	1	7, 10	...	A remarkably fine double star in *Equuleus*. The great inequality of the components with their closeness makes it a rather difficult pair. The stars L. 41438 (6½ m.) and L. 41429 (7 m.) do not exist. Probably they are derived from some observation of 41401 and 41386 from which they differ exactly 1^m in R.A.
164	Σ 2793 A and B	21 19 12	+ 8 52	255	0·7	7½, 7½	Aug. 24	The wide pair is Σ 2793, but the principal star is again double. Struve, whose measures of C are given, could hardly have overlooked the close pair if not closer than now. This star is L. 41645.
	A and C	...	...	242·2	26·51	10		
165	L. 41954	21 27 54	− 3 59	180	6	8½, 10	Aug. 3	The *s* and smaller of two stars forming a pair in the finder.

No.	Designation.	R.A. 1880. h m s	Decl. 1880. ° ′	Position est. °	Distance est. ″	Magnitudes.	Discovered 1873.	Notes.
166	Arg. (+59°) 2396	21 30 17	+59 47	260	1·2	7½, 11	Aug. 4	A very fine pair 2ᵐ 35ˢ *f* a 5 m. star (B.A.C. 7495). Difficult except in a very steady air.
167	Cygni 363	21 31 1	+29 31	110	1·5	7, 12	July 6	A most difficult pair from the extreme minuteness of the companion and its nearness to the bright star; a very elegant pair under favourable circumstances. Very much like No. 135, but not so difficult. It is P. xxi. 215.
168	Taylor 10162	21 47 7	−20 35	80	4	8, 9	Aug. 18	L. 42642. Another minute companion *f.*
169	O. Arg. S. 21760	21 50 49	−21 43	280	1·8	8½, 8½	Aug. 18	The *s* star of a wide pair, 95″ apart, is a pretty and not very easy double. A 6 m. star (B.A.C. 7649) follows 1ᵐ 13ˢ. The 7 m. star 1ᵐ 35ˢ *p* is H. 3065, a wide unequal triple. The *p* star of the now double is a little the smallest. Place from the Washington Catalogue of Stars.
170	L. 43158	22 2 31	−19 4	75	2	8½, 8½	Aug. 14	This beautiful little pair is a distant companion to 35 *Aquarii.* P. = 40°; D. = 160″. There is a minute star between it and 35 *Aquarii.* The wide pair in the field *n f* is H. 3092.
171	L. 43350	22 7 51	−21 38	270	10	8, 15	Sept. 30	This star, which is a distant companion to 41 *Aquarii* (H.N. 56), is 10ˢ *f* and 2′ 44″ *n*, and has a very minute attendant at about twice the distance of that between the components of 41 *Aquarii.* It is spoken of by Webb as a 7 m. star; in Lalande, 9 m.

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No.	Designation.	R.A. 1880. h m s	Decl. 1880. ° ′	Position est. °	Distance est. ″	Magnitudes.	Discovered 1873.	Notes.
172	51 Aquarii = H.V. 95	22 17 52	− 5 27	40	0·5	6, 6	Sept. 15	This star with three very distant companions constitutes the double H.V. 95 (= Σ C.P. 748), but both Herschel and Struve missed the close pair. When first found it was thought to be only moderately difficult, but later observations make it a pretty severe test for a 6-inch.
173	Arg. (+ 56°) 2776	22 22 23	+ 56 35	250	2	8½, 12	Aug. 20	A delicate unequal pair in *Cepheus*, $3^m\ 22^s$ *p* a wide pair (O Σ 473). There is a 10″ pair of 10 m. stars in the field *p*.
174	L. 43888	22 22 58	− 10 17	280	5	8½, 13	Aug. 28	An unimportant pair in *Aquarius*; the most northern of three stars.
175	Arg. (+ 74°) 970	22 29 49	+ 74 24	120	1·5	9½, 9½	July 24	An extremely difficult pair found in looking for H. 1761, one of Herschel's suspected doubles. It cannot be that pair, as it differs in R.A. about 12^m, and 9′ in Decl., with an entirely different position angle. I could not find any double in H.'s place. The new pair is $4^m\ 51^s$ *p* B.A.C. 7907 (6·5 m.) and 21′ *s*.
176	Arg. (+ 38°) 4842	22 35 54	+ 38 57	40	1·8	9, 10	Sept. 2	A pretty little pair $1^m\ 35^s$ *p* and 10′ *s* of the fine pair Σ 2942. The three double stars Σ 2942, O Σ 478, and H. 1803 are identical.
177	No. 22, Z. 145	22 45 55	− 22 20	280	2	7½, 8	Sept. 8	In *Aquarius*. Place from *Washington Meridian Transit Zones*.
178	Aquarii 252	22 48 57	− 5 38	310	0·6	6, 8	Sept. 8	A splendid close pair in *Aquarius*, and perfectly seen though not divided. This is a naked-eye star, and is P. xxii. 250 (B.A.C. 7986).

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No.	Designation.	R.A. 1880. h m s	Decl. 1880. ° ′	Position est. °	Distance est. ″	Magnitudes.	Discovered 1873.	Notes.
179	Anonyma	22 55 48	−22 54	115	5	$8\frac{1}{2}$, $9\frac{1}{2}$	Oct. 19	An unimportant pair of small stars in *Aquarius*.
180	Arg. (+60°) 2482 A and B	23 2 10	+60 11	200	0·5	$7\frac{1}{2}$, $7\frac{1}{2}$	July 27	Another very close and difficult pair (in *Cassiopeia*), with a distant companion. There is also a minute pair in the field *s f*. Σ 2977 is about 36′ north, and OΣ 486 is 3^{m} 44^{s} preceding the new pair.
	A and C	...	...	100	40	10		
181	Aquarius 286 A and B	23 7 31	−14 3	300	1·5	7, 11	Aug. 27	The close pair an exquisitely beautiful object; 5^{m} 15^{s} *p* and 3′ 56″ *n* of the well-known double, 94 *Aquarii* (Σ 2998). The colours of the two nearest are remarkably fine and strikingly contrasted, the primary being reddish. Both companions are difficult in ordinary weather.
	A and C	...	...	230	15	15		
182	Weisse xxiii. 175	23 10 54	−14 27	45	0·8	8, 8	Aug. 27	The *p* star of a small equilateral triangle. It is 1^{m} 52^{s} *p* and 20′ *s* of 94 *Aquarii*. A fine close and rather difficult pair.
--	NEBULA	21 2 14	+47 22	...	...	...	July 6	A very remarkable and curious double, or elongated planetary (?) nebula. It is close to a 9·3 m. star, Arg. (+47°) 3289. P. = 245°; D. = 30″. This may have been noted before, but it is not in Herschel's General Catalogue, or Lassell's Catalogue of New Nebulæ. It bears magnifying well, and the elongation could not be seen with less than 400. With a large aperture it would probably be a very interesting object. It is 12′·6 *n* of f^{2} (63) *Cygni*.